

A Longitudinal Study on Anopheles Mosquito Larval Abundance In Distinct Geographical and Environmental Settings In Western Kenya. (2011)

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Abstract

Background:

As the ecology of mosquito larvae can be complex there is need to develop a rational framework for undertaking larval ecological studies. Local environmental characteristics, such as altitude, climate and land use, can significantly impact on phenology and population dynamics of mosquito larvae, and indirectly affect the dynamics of mosquito-borne diseases. The aim of this study was to assess the feasibility of implementing an integrated approach to larval source management under the distinct ecological settings.

Methods:

The study was conducted in two highland villages and one village, at a lower altitude, in the Lake Victoria basin, where malaria is endemic and transmitted by the same *Anopheles* mosquito species. In each village the stability of mosquito larval habitats was classified as either temporary or permanent. The productivity of these habitat types was quantified by carrying out weekly larval sampling using a standard dipping method for a period of two years. During sampling the physical characteristics of the larval habitat, including the vegetation cover were noted. Ambient temperature, rainfall and relative humidity were recorded on a 21 × Micro-datalogger in each study site.

Results:

Anopheles gambiae sensu lato larvae were found in all study sites.

Anopheles arabiensis was more abundant (93%) in Nyalenda (Lake Victoria basin) and Fort Ternan (highland area; 71%). In Lunyerere (highland area),

An. gambiae sensu stricto

o comprised 93% of the total

An. gambiae s.l. Larvae. Larvae of

An. gambiae s.l. mosquitoes were present in both temporary and permanent habitats with monthly variations dependent on rainfall intensity and location.

Anopheles larvae were more likely to be found in man-made as opposed to natural habitats.

Grassy habitats were preferred and were, therefore, more productive of *Anopheles* larvae compared to other habitat types. Weekly rainfall intensity led to an increase or decrease in mosquito larval abundance depending on the location.

Conclusion:

The majority of mosquito breeding habitats were man made in all sites. Both temporary and permanent habitats were suitable for

An. Gambiae breeding. In Fort Ternan temporary sites were favoured for mosquito breeding above permanent sites. Significant differences in larval abundance were found depending on weekly rainfall intensity. Larval source management programmes should target permanent and temporary habitats equally and work closely with land and home owners as a majority of the breeding habitats are manmade

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